

# Book Notes

**Geophysics: The Earth's Environment**, edited by C. DeWitt, *Centre National de la Recherche Scientifique*, J. Hieblot, *Laboratoire de Physique Ecole Normale Supérieure*, and A. Lebeau, *Institut de Physique du Globe* (Gordon and Breach Science Publishers, New York, 1963), 624 pp. \$8.50 paper, \$10.50 cloth.

*Contents:* 11 papers contributed by different authors and divided into 3 major parts. Part 1) Basic Theory; Part 2) Composition and Constitution of the Earth's Environment; Part 3) Disturbances and Waves.

This volume contains lectures delivered at Les Houches during the 1962 session of the Summer School of Theoretical Physics, University of Grenoble. The lectures advance from basic principles to specialized questions and survey much of recent geophysical progress since the advent of research rockets and satellites. Four of the papers are in French, and the remaining seven are in English.

**States of Matter**, E. A. Moelwyn-Hughes, *Lecturer in Physical Chemistry, University of Cambridge* (Interscience Publishers Inc., New York, 1961), 100 pp. \$3.50.

*Chapters:* 1) General Theory; 2) The Crystalline State; 3) The Gaseous State; 4) The Metallic State; 5) The Liquid State; 6) The Dissolved State; 7) The Ionic State; 8) The Interfacial State.

This book describes briefly a theory of intermolecular forces which can be applied to matter in all of its states. It is intended primarily for chemists, physicists, chemical engineers, and metallurgists who are able to cope with the second- or third-year courses given in these subjects at universities and technical colleges.

**Advances in the Astronautical Sciences**, edited by Horace Jacobs (Plenum Press, New York, 1963), Vol. 8, 589 pp. \$19.50.

*Contents:* 59 papers contributed by different authors and divided into 12 major parts. Part 1) Introduction: Special Lectures; Part 2) Space Communications; Part 3) Solar System Physics; Part 4) Bioastronautics; Part 5) Re-Entry and Recovery; Part 6) Geophysical Exploration; Part 7) Astrodynamics; Part 8) Space Systems Applications;

Part 9) Navigation and Guidance; Part 10) Cosmology; Part 11) Lunar Exploration; Part 12) Social and Political Aspects.

This volume contains the Proceedings of the Seventh Annual Meeting of the American Astronautical Society held in Dallas, Texas, January 16-18, 1961. The technical papers appear in the volume essentially in the order in which they were presented at the meeting. Fourteen of the papers, however, are presented only in abstract or summary form.

**The Physics of Combustion and Explosion**, L. N. Khitrin (Israel Program for Scientific Translations, Jerusalem, 1962), 448 pp. \$12.00.

*Chapters:* 1) Short Outline of Chemical Kinetics; 2) Ignition Processes; 3) Flame Propagation, Normal Propagation, and Combustion; 4) Process of Flame Propagation: Detonation; 5) Some Combustion Problems in Internal-Combustion Engines and Gas Burners; 6) Burning of Liquid Fuels; 7) Burning of Solid Fuel; 8) Burning Velocity of Coal; 9) Burning of Aggregates of Particles (Solid Layers, "Boiling" Layers, Suspensions in Air); 10) Ignition of Carbon (Coke).

This textbook, translated from the Russian, introduces the reader to the modern problems of combustion kinetics. It was written from lectures delivered for many years at the Department of Physics of Moscow University. The present status of the subject is treated, including the historical background and application.

**Applied Astronautics: An Introduction to Space Flight**, Frederick I. Ordway III, *NASA George C. Marshall Space Flight Center*, James Patrick Gardner, *NASA George C. Marshall Space Flight Center*, Mitchell R. Sharpe Jr., *University of Alabama Center, Huntsville, Ala.*, and Ronald C. Wakeford, *Melpar Inc., Falls Church, Va.* (Prentice-Hall Inc., Englewood Cliffs, N. J., 1963), 449 pp. \$16.00.

*Chapters:* 1) Spacecraft: Vehicles for Space Operations; 2) Launching Operations and Sites; 3) Fundamental Flight Mechanics; 4) Space Flight Mechanics; 5) Space Communications, Tracking, and Navigation; 6) Orbital Operations; 7) Exploration, Colonization, and Exploitation of the Solar System; 8) Beyond the Solar System.

The purpose of this book, a companion to *Basic Astronautics*, is to survey the techniques, equipment, and operations involved in space flight. It is introductory in nature and is written primarily at

the descriptive level, although the nature of some of the subjects requires a certain amount of mathematical treatment.

**Temperature Response Charts**, P. J. Schneider, *Director of Engineering, Thermatest Laboratories Inc., Sunnyvale, Calif.* (John Wiley and Sons Inc., New York, 1963), 153 pp. \$7.50.

*Chapters:* 1) Introduction; 2) Nomenclature; 3) Layout of Charts; 4) Description of Charts; 5) Example Use of Charts; 6) List of Charts; 7) Charts; 8) References.

This book contains 120 charts covering analytical solutions to 53 practical transient heat-conduction problems. The charts give temperature-time relations in a variety of body shapes under conditions of heating and cooling with constant and variable surface temperature, constant and variable ambient temperature, constant and variable heat input, and radiation. It is designed to be of use to designers of hardware components and systems subjected to heating and cooling environments, to the structural stress analyst electronics designer, to engineers who must apply heat-conduction theory to critical design problems, and to research workers in the field of heat-transfer and thermal-property measurements.

**Topics in the Theory of Random Noise, Volume 1: General Theory of Random Processes; Nonlinear Transformations of Signals and Noise**, R. L. Stratonovich, *Moscow State University*, translated from the Russian by Richard A. Silverman (Gordon and Breach Science Publishers, New York, 1963), revised English edition, 292 pp. \$12.50.

*Chapters:* 1) Random Functions and Their Statistical Characteristics; 2) Stationary Random Processes and Spectral Densities; 3) Gaussian and Non-Gaussian Random Processes; Quasi-Moment Functions; 4) Markov Processes and Related Processes; 5) Nonstationary Random Processes; 6) Systems of Random Points and Related Random Functions; 7) Narrow-Band Random Processes; 8) Zero-Memory Nonlinear Transformations; 9) Nonlinear Transformations with Memory; Detection of Random Signals.

This book presents an organized study of noise in relays and oscillators from a rather general viewpoint. Material that can be found in the literature has been systematized, and the results of some original investigations by the author have been included.

The books listed here are those recently received by the AIAA from various publishers who wish to announce their current offerings in the field of astronautics. The order of listings does not necessarily indicate the editors' opinion of their relative importance or competence.